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~~Vol. 3, No. 10.~~ ~~May, 1934.~~

Agriculture.

Agricultural financing through the Farm Credit Administration. 1934. 31p. Farm Credit Administration. Circular no. 5.

American farm problem: selected list of books and pamphlets on the economic status of the farmer and measures for his relief since 1920. 1934. 13p. U. S. Bureau of Agricultural Economics. Agricultural Economics Bibliography no. 52.

Annual report for the fiscal year ending November 30, 1933. 1934. 67p. Massachusetts. Agricultural Experiment Station. Bulletin no. 305. Department of Agricultural Engineering, p. 6.

Federal land bank loans and land bank commissioner's loans: how and where to apply. 1934. 15p. Farm Credit Administration. Circular no. 1.

Fifty-second annual report, 1932-1933. 1934. 112p. Ohio. Agricultural Experiment Station. Bulletin no. 532. Agricultural Engineering. p. 86-92.

Forty-sixth annual report of the Purdue University, Agricultural Experiment Station for the year ending June 30, 1933. 1934. 82p. Department of Agricultural Engineering, p. 6 - 10.

Loans by federal land banks and land bank commissioner: some questions and answers. 1934. 15p. Farm Credit Administration. Circular no. 4.

Maine Agricultural Experiment Station: Summary report of progress, 1933. 1933. 503-596p. Bulletin no. 369. Tractive Power, p. 513-514.

Objectives in agricultural research. By B. Youngblood. Experiment Station Record. v. 70, no. 4. April, 1934. p. 433-437.

Production costs and returns from major Salt river valley field crops, 1928-1930. By R. L. Matlock and S. P. Clark. 1934. 57p. Arizona. Agricultural Experiment Station. Bulletin no. 146.

Air Conditioning.

Air conditioning for dairy barn. By Harry J. Lagodzinski. Building Material Digest. v. 3, no. 4. April, 1934. p. 19. Farmers' problem calls for lowering the humidity, maintaining warm barn, and supplying definite amount of fresh air per cow.

Origins of air conditioning. By David L. Fiske. Refrigerating Engineering. v. 27, no. 3. March, 1934. p. 123-126, 150.

Belts.

Flat-belt power losses and how to reduce them. By Robert W. Drake. Power. v. 78, no. 5. May, 1934. p. 238-240. Tells how to modernize drives.

Building Construction.

Continuous beam design by successive influence lines. By I. Duberstein. Engineering News-Record. v. 112, no. 15. April 12, 1934. p. 471-473.

Conservation.

Serious Utah drought demands emergency conservation plans. Engineering News-Record. v. 112, no. 19. May 10, 1934. p. 618. Recent survey of water supplies available for coming summer and fall season indicates stream flow will be lowest in twenty years; snow surveys show average depth is about half the depth of a year ago, which means an exceptionally dry year will follow one which was also decidedly subnormal.

Driers.

Drying fruits and vegetables in the home. 1934. 8p. Washington State College. Extension Servie. Extension Bulletin no. 188.

Small electric driers for fruits and vegetables. 1934. 2p. Mimeographed. Rural electric project, University of Maryland. Supplement to report no. M-14.

Earth Pressure.

Coulomb's theory of earth pressure rectified. By Pao-Tse Sun. Civil Engineering. v. 4, no. 5. May, 1934. p. 255-257. Algebraic and graphical methods used to determine point of application of resultant.

Electric Power.

Selection of generator-voltage regulators. By A. G. Gower. Electric Journal. v. 31, no. 4. April, 1934. p. 145-147, 150. Three basic principles are used separately or in combination in eight or more common regulators, from which can be selected regulator best suited to voltage-control conditions in any particular type of power plant.

Electric Wiring.

Range-wiring costs cut to $17. Electrical World. v. 103, no. 14. April 7, 1934. p. 518-519. Two-thirds of customer cost of range wiring been lopped off by mounting range switch within outdoor meter box.

Wiring simplified. By H. P. Richter. 5th edition. Chicago. Montgomery Ward, 1934. 76p. Revised to include changes required by 1933 National electric code.

Electricity in the Home.

Choosing and operating electric stoves. By A. E. Baragar and Edna B. Snyder. 1934. 22p. Nebraska. Agricultural Experiment Station. Circular no. 47.

Electricity on the Farm.

Electricity aids dairymen in holding customers. By R. U. Blasingame. Electricity on the Farm. v. 7, no. 5. May, 1934. p. 4-7.

Rural electrification in New Zealand. Rural Electrification and Electro-Farming. v. 9, no. 106. March, 1934. p. 298, 300. Summary of farm machinery employed on farms outside borough boundaries during years 1927 to 1931 shows greatly increased use which is now being made of electricity and of mechanical equipment as compared with position in 1927.

Engines.

Economics of modern design of internal combustion engines. By E. S. Chapman. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 129-132.

Fuels for spark-ignition and compression-ignition engines. By J.B. Fisher. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 133-136.

German truck makes swing to Diesels. By Edwin P. A. Heinze. Automotive Industries. v. 70, no. 15. April 14, 1934. p. 450-455. Air cooling gains as do gas generators and steam engines.

High-speed vs. low-speed internal combustion engines. By S. F. Evelyn. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 126-128. Utility range of internal-combustion engine designed for operating at high speeds is much greater than that of engine primarily intended to operate at more or less fixed speed value of lower order, is contention of author, and he contends further that, if properly applied, high engine speeds make possible far-reaching economies.

Wood gas drives big truck at half of usual cost. Popular Mechanics. v.61, no. 1. January, 1934. p. 4. Tested in three-ton truck, wood gas has been found to operate at half cost of vehicles propelled by gasoline in Czechoslovakia. Gasoline prices are high in that country. Beech wood was used for heating generator. Unsuitable for passenger autos, due to time taken to heat generator and due to extra load that is imposed by wood-gas plant.

Erosion Control.

Capacity of outlets for erosion-control dams. By C. E. Ramser. Engineering News-Record. v. 112, no. 19. May 10, 1934. p. 595-596. Hydraulic characteristics and discharge capacities determined for drop-inlet pipe and box culverts used as outlets for small dams built on soil-saving projects.

Erosion-control plan from Australia: Editorial. Tractor Farming. v. 19, nos. 3 and 4. April-May, 1934. p. 16-17. One plan recommended: Government buy three-plow tractors to be sold to farmers on following conditions: 1. Tractors to remain government property until fully paid for. 2. Purchas-

Erosion Control. (Cont'd)

ers to be responsible for upkeep and repairs. 3. Tractors to be used at any farm job at any time, but within three months of purchase, farmer shall submit scheme or any schemes of reclamation, to be approved by government's engineer and completed within twelve months.

Preventing ditch erosion by check dams. By Searcy B. Slack. Engineering News-Record. v. 112, no. 15. April 12, 1934. p. 469-470. Design of road side-ditch grades and cross-sections, and of check dams to reduce velocity of current in loose soil ditches.

Reaping the wind. By Ben Hibbs. Country Gentleman. v. 104, no. 5. May, 1934. p. 15, 45, 48. Discussion of wind erosion.

Sand mixtures and sand movement in fluvial models. By Hans Kramer. Proceedings American Society of Civil Engineers. v. 60, no. 4. pt. 1. April, 1934. p. 443-483. Deals entirely with phenomenon of traction.

Extension.

Agricultural extension service, Missouri College of Agriculture; Annual report for 1933. 1932. 58p. Circular no. 310. Agricultural Engineering, p. 37-38. Erosion control, p. 39.

Fans, Mechanical.

What type fan for forced and induced draft? By A. A. Criqui. Power. v. 78, no. 5. May, 1934. p. 250-251. Performance characteristics of straight, forward-curved, and double-curved blades are discussed with reference to their suitability for use as induced or forced-draft fans.

Farm Buildings and Equipment.

Length of stalls. Hoard's Dairyman. v. 79, no. 4. February 25, 1934. p. 73. Length of stall in inches from center of stanchion curb to manure gutter should be same as length of cow in inches minus 1.5. Length of stall in inches from center of stanchion curb to manure gutter should be weight of cow divided by 50 and to this result add 36.5 Gives diagram of stall dimensions and cow showing how her length is measured from shoulder point to tail head.

Pressures and loads of ear corn in cribs. By J. R. McCalmont and Wallace Ashby. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 123-125, 128. Conclusions: These experiments indicate that outward and downward pressures on walls and loads on cross-bracing of corn cribs are much larger than is commonly supposed. Failures may be due to lack of cross-bracing to resist outward pressure, or to improperly designed cross-bracing that is broken by weight of corn above. Factor of safety should be large enough to provide for variations in weight of corn and unusually rapid filling of crib.

Farm Machinery and Equipment.

Attachments for discs to control depth of tillage. By J. P. Fairbank. Implement Record. v. 31, no. 5. May, 1934. p. 6-7. Diagrams show depth control devices for disc harrows.

Farm Machinery and Equipment. (Cont'd)

Better cultivation is possible with 1934 tools. Implement & Tractor Trade Journal. v. 48, no. 8. April 21, 1934. p. 10-11, 16. General purpose units greatly improved for easier handling and higher speeds; row capacities increased; horse-drawn tools share in improvement.

"Boarder" machinery costly. By W. C. Krueger. New England Homestead. v. 107, no. 6. March 17, 1934. p. 9. Factors determining whether machine is "boarder equipment and which would favor its replacement with new machinery are annual repair costs for old machine; increased operation cost resulting from inefficiency and inconvenience; decreased returns resulting from poor work; and probable loss of time and money due to breakdowns and delays.

Corn harvesting methods in Connecticut. By W. H. McPheters. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 137-139. Corn sled. Low wagon.

Farm and machine. Vol. 1. Oxford, University Press, 1934. 94p. Report of the Institute for research in Agricultural Engineering for year ending September 1933 and miscellaneous paper on agricultural engineering.

Farm equipment marches on. By Harry G. Davis. Farmer and Farm, Stock and Home. v. 52, no. 4. February 17, 1934. p. 7, 12. Stresses the need for equipment for the very small land owner.

Furrow versus surface planting winter wheat. By T. A. Kiesselbach and W. E. Lyness. Journal of American Society of Agronomy. v. 26, no. 4. April, 1934. p. 289-293. Types of drills tested. Plan of experiment. Results. Relation of plant development to manner of planting.

Making hay with windrow baler. By A. J. Schwantes. Farm Implement News. v. 55, no. 9. April 26, 1934. p. 26. Report of observations made by Agricultural Extension Division, University of Minnesota.

Portable small grain thresher. Journal of American Society of Agronomy. v. 26, no. 4. April, 1934. p. 346-352. Description of motor. Description of thresher. Accessories. Operation.

Farmhouses.

Farm and village housing. Architectural Record. v. 75, no. 4. April, 1934. p. 297-370. Better homes as an aid to recovery, p. 297-299. Survey of farm conditions, p. 300-307. Research in farm structures, by Henry Giese, p. 308. Planning the farmstead, by M. C. Betts and W. R. Humphries, p. 309-311. Planning the farmhouse for family needs, by Maud Wilson, p. 312-330. Desirable requirements for the farmhouse, p. 331-332. Subsistence farmsteads, by A. Lawrence Kocher and Albert Frey, p. 349-356. Heat and light on the farm: Utilization of farm wastes, by P. Burke Jacobs, p. 357-368.

What farm homes need. Prairie Farmer. v. 106, no. 8. April 14, 1934. p. 14. Survey indicates desire for repairs and conveniences.

Fences.

To build good fences - a variety of materials may be used. By Ivan D. Wood. Nebraska Farmer. v. 76, no. 8. April 14, 1934. p. 20.

Fences. (Cont'd)

What is a good fence? By Howard McCoy. Country Gentleman. v.104, no. 5. May, 1934. p. 42. Recommends an impartial and complete study of fencing and the setting up of standard specifications as to materials and manufacturing.

Fertilizers.

Effect of fertilizers on yield of cotton and on control of root-rot disease of cotton on blackland prairie soils of Texas, By E. B. Reynolds and H. E. Rea. Journal of American Society of Agronomy. v. 26, no. 4. April, 1934. p. 313-318. Eighty-five cooperative fertilizer experiments on cotton were conducted with farmers on soils in Blackland Prairie of Texas in 1930, 1931, and 1932, to determine effect of fertilizers on yield of cotton and on control of root-rot disease of cotton. In these experiments 4-8-4, 4-8-0, and 6-12-0 fertilizers produced significant increases in yield of cotton, but increases were not profitable. Fertilizer treatments had no effect on root-rot disease. These results indicate that on soils studied use of fertilizers is not promising means of reducing or evading losses caused by the disease.

Effect of nitrogenous fertilization on the protein content of corn when harvested for silage. By C. B. Bender and A. L. Prince. 1934. 4p. New Jersey Agricultural Experiment Station. Bulletin no. 563.

Filters and Filtration.

Study of filtering materials for rapid sand filters. Part 1. By John R. Baylis. Water Works and Sewerage. v. 81, no. 4. April, 1934. p. 127-130. Reviews briefly what has been done in past on filtering materials, and to give some of main facts brought out by study of such materials which has been under way for past several years.

Fireplace.

Fireplaces - friendly, cheerful companions. By John Cushman Fistere. Better Homes & Gardens. v. 12, no. 4. December, 1933. p. 10-11, 42.

Floods and Flood Control.

Channel regulation by dikes on the middle Mississippi. By B. M. Harloe. Engineering News-Record. v. 112, no. 19. May 10, 1934. p. 606-610. Project for 9-ft. navigation from St. Louis to Cairo nearing completion. Legislative history, planning principles and contraction structures outlined. Results effected.

Fire and flood. By Geo. H. Cecil. 1934. 12p. Mimeographed. Conservation Association, 1151 South Broadway, Los Angeles, Calif. Discussion of the relationship between the destruction of forest lands and floods.

Flood control will govern Muskingum project operation. Engineering News-Record. v. 112, no. 19. May 10, 1934. p. 614. Project as adopted provides for both flood control and water conservation. In general, where two are in conflict, as might occur in reservoirs of limited capacity, needs for flood control will govern. In certain reservoirs, avail-

able storage capacity will be sufficient to permit constant impounding of water. In these cases, need for both flood control and water conservation will be met.

Hold that river. By Harris Dickson. Country Home. v. 58, no. 4. April, 1934. p. 10-11, 34-38.

Two wild rivers tamed. Arizona Producer. v. 13, no. 2. April 1, 1934. p. 7. Flood protection work on Agua Fria and New River ends menace to valley.

Floors.

Cement-sawdust for floors. By William L. Teutsch. Hoard's Dairyman. v. 79, no. 3. February 10, 1934. p. 51. Mix recommended by Oregon Experiment Station develops compressive strength of from 1500 to 1700 pounds per square inch in 28 days. Such mixture can be made of one sack of cement, $1\frac{1}{2}$ cubic feet clean sawdust free from bark, $\frac{1}{4}$ cubic feet clean sand, and enough water to permit of easy placing.

Flow of Water.

Discharge coefficients for pipe orifices. By Wallace W. Lansford. Civil Engineering. v. 4, no. 5. May, 1934. p. 245-247. Results of eight investigations collated.

New velocity-measuring device developed in Waterways Laboratory. Engineering News-Record. v. 112, no. 16. April 19, 1934. p. 508-509. Developed in U. S. Waterways Experiment Station, Vicksburg, Mississippi. New instrument is designed to measure velocities ranging from 0.10 to 5 feet per second. Water flowing into upstream leg of tube causes velocity head to be created. Velocity head on downstream leg is negative. This difference in head causes circulation through tube of small quantity of water, amount depending upon velocity of water flowing in flume or pipe into which tube has been lowered. Inside right-hand leg of tube, which has an even taper inside, is small float made of piece of capillary glass tubing closed at both ends. This float has been built to have very slight buoyancy. When there is no flow through tube, i. e., when velocity being measured is zero, float rises until it rests against wire stop in upper end of tapered tube. When water is flowing through tube, impact of flowing water causes float to be pushed down tapered tube. At some point within length of tapered section impact force of water, reduced by enlarged section, exactly balances buoyancy force of float, causing it to come to rest.

Watershed protection. Utah Farmer. v. 14, no. 17. April 10, 1934. p. 3. Watershed problems to be faced in immediate future include supplying abundant pure water for domestic and industrial purposes and irrigation, regulated stream flow for water power and navigation, and prevention of floods and soil erosion.

Fuels.

Know your fuel oil if you expect minimum cost performance. By George C. McNutt. Implement Record. v. 31, no. 4. April, 1934, p. 11, 20. Information obtained from engineers and fuel oil men of Standard Oil, Shell

Fuels. (Cont'd)

oil and associated oil companies.

Study of fuel burning rates and power requirements of oil burners in relation to excess air. By L. E. Seeley and E. J. Tavanlar. Heating, Piping and Air Conditioning. v. 6, no. 5. May, 1934. p. 219-222. Paper is result of research conducted at Yale University, New Haven, Connecticut, in cooperation with A.S.H.V.E. Research Laboratory and American Oil Burner Association.

Hay.

Determining tonnage of hay in stacks. By R. L. Adams. 1934. 26p. California. Agricultural Experiment Station. Bulletin no. 570.

Heating.

Design and valuation of cast iron domestic heating boilers. By Dr. Charles W. Brabbee. Heating, Piping and Air Conditioning. v. 6, no. 5. May, 1934. p. 223-228.

Effect of moisture on heat transfer. By Siegfried Ruppricht. Refrigerating Engineering. v. 27, no. 4. April, 1934. p. 182-191.

Government survey to show need for plumbing and heating. Domestic Engineering. v. 143, no. 4. April, 1934. p. 34-35, 154. Reports released on housing conditions investigated in farm and rural districts.

How to heat the detached garage. By Harold L. Alt. Domestic Engineering. v. 143, no. 4. April, 1934. p. 31-33, 44.

Performance of extended cooling surfaces. By Chester J. Scanlan. Refrigerating Engineering. v. 27, no. 4. April, 1934. p. 197-199. How to state and compute the transfer of sensible and latent heat, with test data and examples.

Hotbeds.

Control of electrically heated garden frames. Rural Electrification and Electro-Farming. v. 9, no. 106. March, 1934. p. 300. Review of methods of controlling heat in garden frames. Manual, time switch or thermostatic control.

Soil heating design curves. By Neal D. Herrick. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 136. Use of curves makes it possible to immediately determine length of cable necessary and spacing of cable in bed, after heat density per square foot has been decided upon.

Houses.

Many problems of home building discussed at Illinois conference. Brick & Clay Record. v. 84, no. 4. April, 1934. p. 142-144. Topics included reduction of construction costs, reinforced brick masonry for home building, needed farm home modernizing.

Houses. (Cont'd)

New bill to attack housing on a new and wide front. Engineering News-Record. v. 112, no. 15. April 12, 1934. p. 478. Modernization, construction and demolition of both homes and industrial structures, with Federal guarantee of credit risk, form part of President's plan.

Origin of present-day architecture. By Don Graf. American Home. v. 11, no. 2. January, 1934. p. 76-77. Characteristics of the Georgian house.

Pinal homes surveyed. Arizona Producer. v. 13, no. 3. April 15, 1934. p. 13. Need revealed for more room, water, sanitation, electricity and other conveniences.

We're on our way to better homes. Washington Farmer. v. 69, no. 8. April 19, 1934. p. 3. Suggestions for building and home improvement.

Houses, Remodeling.

Farm house remodeled. Wisconsin Agriculturist and Farmer. v. 61, no. 7. April 14, 1934. p. 15.

Remodeling pays! By Jefferson Hamilton. American Home. v. 11, no. 2. January, 1934. p. 84-85.

They make modern home from old house. By Ila A. Leonard. Michigan Farmer. v. 182, no. 8. April 14, 1934. p. 5, 28.

Hydraulics.

Length of hydraulic jump investigated at Berlin. By Donald P. Barnes. Civil Engineering. v. 4, no. 5. May, 1934. p. 262-263.

Practical hydraulics. By P. S. Wilson. Water Works and Sewerage. v. 81, no. 4. April, 1934. p. 119-120. Sharp crest weir.

Practical river laboratory hydraulics. By Herbert D. Vogel. Proceedings of American Society of Civil Engineers. v. 59, no. 9. November, 1933. p. 1413-1439. Summarizes as briefly as possible, existing data and to describe proven methods applicable to solution of river hydraulics problems in laboratory. By do doing, it should serve as basis of procedure for laboratory technician and as guide to field engineer who wishes to know what specific types of problems may be reasonably subjected to laboratory treatment.

Insect Control.

Plowing to control grasshoppers. By J. A. Munro. 1933. 4p. North Dakota. Agricultural Experiment Station. Circular no. 52.

Insulation.

Aluminum foil insulation. By Charles H. Herter. Ice and Refrigeration. v. 86, no. 5. May, 1934. p. 341-343. Discussion of aluminum foil as modern air space insulation medium. Suitable for heat and cold. Comparison of various insulators. Prevention of air infiltration. Use for truck and house insulation.

Insulation. (Cont'd)

Dielectric power-factor. By F. R. Benedict. Electric Journal. v. 31, no. 4. April, 1934. p. 142-144. Measurement of power-factor of material is fast being recognized and practised as a means of determining worth of that material as electrical insulation. Significance of power-factor, loss-factor, loss angle, and equivalent circuits of dielectric are explained.

Insulation for farm buildings. By W. C. Harrington. New England Homestead. v. 107, no. 4. February 17, 1934. p. 6. Use of insulating lumber if carefully applied and fitted around openings is effective in eliminating drafts caused by leaky walls or floor, in reducing heat loss through cold walls and also in reducing infiltration of cold air. Addition of one-half inch of insulation is usually sufficient to overcome deficiencies of construction usually made.

Insulation for modern home. By A. P. Kratz. Domestic Engineering. v. 143, no. 4. April, 1934. p. 72-73, 102-103. Thickness of insulation. Structure of walls. Insulation of ceilings. Excerpts from paper read before midwest bituminous fuels conference, Purdue University.

Thermal insulation with aluminum foil. By J. F. O. Stratton. Power Plant Engineering. v. 38, no. 5. May, 1934. p. 241-242. By taking advantage of high heat reflecting quality of bright surfaces and low conductivity of air an excellent insulation is made with aluminum foil.

Irrigation.

For a thirsty land. By Mae Noble Rineman. Country Gentleman. v. 104, no. 5. May, 1934. p. 18-19, 56-57. Discussion of the irrigation work of the Bureau of Agricultural Engineering.

Function of Division of Irrigation, U. S. Department of Agriculture. California Cultivator. v. 81, no. 7. March 31, 1934. p. 155. Explains few of many phases of this work that are of direct benefit to these farmers. Aside from those studies designed to make for greater efficiency in use of irrigation water, ways and means of conving and storing flood waters that now are lost are important parts of this work, and of particular value in areas where normal rainfall is no longer sufficient to care for our irrigation needs.

Irrigation groups meet. Idaho Farmer. v. 52, no. 3. February 8, 1934. p. 2. Methods of conserving irrigation water, and more effective control and eradication of rodents and noxious weeds were principal matters discussed by stockholders of several of larger canal and reservoir districts which held their annual meetings in January in southern Idaho, all adjacent to Snake River irrigation system.

Learning by necessity: Editorial. California Cultivator. v. 81, no.7. March 31, 1934. p. 158. We have found out that we can get along not only on less water but that we are materially lengthening life and productivity of our orchards by so doing.

Irrigation. (Cont'd)

Maintenance of a Canadian irrigation flume. By Robert S. Stockton. Civil Engineering. v. 4, no. 5. May, 1934. p. 238-239. 24 year old conduit successfully waterproofed with coating of pitch and tallow.

Make efficient use of irrigation water. Idaho Farmer. v. 52, no. 5. March 8, 1934. p. 14. Farmers who fill root zone reservoir when water is plentiful will have just that much less irrigating to do later when water is apt to be scarce.

Orchard income vs. irrigation cost. California Cultivator. v. 81, no.7. March 31, 1934. p. 159, 175.

Portable sprinkling systems. By J. E. Christiansen. California Cultivator. v. 81, no. 7. March 31, 1934. p. 155, 163.

"New deal" for irrigation. By H. F. Kenyon. California Cultivator. v. 81, no. 7. March 31, 1934. p. 157. Scientific use of water is "New deal" in irrigation.

Water use by citrus. Arizona Producer. v. 13, no. 2. April 1, 1934. p. 1, 6. Trees need over twice as much in summer as winter. Other new discoveries.

Land.

Managing good land. H. R. Tolley. California Cultivator. v. 81, no. 7. March 31, 1934. p. 157, 175.

Plans announced for purchase of submarginal lands. Engineering News-Record. v. 112, no. 19. May 10, 1934. p. 605. Principles established to guide in selection of lands: 1. Project includes land now used for agricultural purposes which normally does not yield sufficient income to support its occupants. 2. Land is suitable for other beneficial public use. 3. Occupants of land will cooperate in resettlement. 4. Adequate plans for resettlement are developed. 5. Existing public agency, local, state or federal, or joint agency of two or more of these, will assume responsibility for project by definite agreement.

Proceedings of the first Pacific Northwest regional planning conference at Portland, Oregon. March 5th, 6th and 7th, 1934. 1934. 131p. Water resources and power section, p. 43-46. Columbia basin section, p. 61-62. Land and its use, by R. E. Willard and L. C. Wheeting, p. 63-65. Land use planning in Montana, p. 70-73. Subsistence homestead movement, by E. C. Johnson, p. 74-78. Water power data, by G. H. Canfield, p. 79-80. Common needs of the Columbia basin, by E. A. Smith, p. 113-114.

Levees.

Closure of crevasses in small levees. By Blair A. Ross. Civil Engineering. v. 4, no. 5. May, 1934. p. 252-254. Sand bags placed in water from light timber trestles form effective barriers.

Miscellaneous.

Art of teaching by radio. By Cline M. Koon. 1933. 91p. U. S. Department of the Interior. Bulletin no. 4. Makes available to educational profession what appear to be best practices in teaching by radio. Study is limited to consideration of problems of educational broadcasting.

List of bulletins of the agricultural experiment stations for the calendar years 1931 and 1932. 1934. 77p. U. S. Department of Agriculture. Miscellaneous publication no. 181.

Minutes of proceedings of the Institution of Civil Engineers. v. 234. London, 1933. 562p. Pressure on retaining walls, by C. F. Jenkin. p. 103-223. Some aspects of the corrosion problem. By U. R. Evans. p. 445-490.

Report of the governor's emergency farm mortgage committee, December, 1932 - December, 1933. 1934. 18p. New Jersey. Department of Agriculture. Circular no. 237.

Road to economic recovery. By Rexford G. Tugwell. Extension Service Review. v. 5, no. 3. March, 1934. p. 33-34, 46. More immediate objective of recovery is to raise prices in area of flexibility, to raise production in area of rigidity and raise both prices and production in intermediate areas of industry until all groups attain ready exchangeability which they once had. To gain exchangeability, it is necessary that increased direct costs of operation attributable to paying higher wages should be absorbed by profit takers without any increase in prices. This involves spreading overhead and increasing wages so that increased volume of production can be purchased by workers, or in part by workers and in part by farmers who receive more than workers for commodities they supply.

Motors.

Your small motor, how to increase its usefulness. By George W. Kable. 1934. 4p. Maryland University. Extension service. Circular no. 105.

Printing.

Aluminum priming paint. By F. L. Browne. Industial & Engineering Chemistry. v. 26, no. 4. April, 1934. p. 369-376. Effect on durability of house paints on wood. Consistently demonstrated a distinct superiority in service. Improvement in durability was manifested by retardation in rate at which paint coatings, embrittled with age, flaked from bands of dense, horny summerwood present in softwood lumber. Benefit gained by priming with aluminum paint was greatest for woods that have much summerwood, such as southern yellow pine and Douglas fir. When repainting was neglected for some time, coatings applied over aluminum primer suffered less damage, and surfaces were then more easily and durably repainted.

Poultry Houses and Equipment.

Apartment: one flight up. Washington Farmer. v. 69, no. 7. April 5, 1934. p. 8, 17. Upstairs chicken houses are gaining popularity among western poultry raisers, for they are both practical and economical.

Poultry Houses and Equipment. (Cont'd)

Sunporches for poultry. By J. S. Carver. 1934. 4p. Washington State College. Extension Service. Poultry Pointers no. 15.

Washington range shelter. By Gordon E. Bearse. 1934. 4p. Washington State College. Extension Service. Poultry Pointers. no. 17.

Power.

Power use is economy. Wisconsin Agriculturist and Farmer. v. 61 no, 6. March 31, 1934. p. 7. Far from aggravating surplus problem, scientific methods point way to its solution by making production more dependable, and therefore more easily controlled. Resourceful power farmers are not abandoning their equipment and scientific methods in order to find way out of present difficulty, but are carefully studying their business so as to make more economical use of power and labor. Because of relatively high purchasing power of horses at present it is good time for tractor farmers to sell horses and in most cases adjust their production so that minimum number may be required in future operations. It is unlikely, after prices have resumed more normal relationship, that horses will have anything like their present purchasing power because of continued development that may be anticipated in tractors and special tillage and harvesting equipment for their more profitable use.

Tractors, horses and mules. By F. J. Keilholz. Far, Journal. v. 58, no. 5. May, 1934. p. 7. Where does the advantage lie between the two types of farm power? Difference in net income. Cost of operating tractors of various sizes.

Pumps and Pumping.

Development of the Humphrey pump in America. By F. Du P. Thomson. Power Plant Engineering. v. 38, no. 5. May, 1934. p. 243-244. Substitution of water for conventional gas engine piston forms displacement pump of high efficiency.

Ram may pump for you. Wisconsin Agriculturist and Farmer. v. 61, no. 7. April 14, 1934. p. 14. Water ram will operate on volume of two gallons per minute, but for average farm home a ram using 15 gallons per minute is outfit most satisfactory. Such supply, given fall of six feet, will furnish 45 gallons to tank of 80 feet above ram.

Refrigeration.

How to build an insulated milk cooling tank. By W. H. McPheters. 1934. 15p. Connecticut State College. Extension Service. Bulletin no. 205.

Mollier psychrometric chart. By Ferdinand Keppler. Refrigerating Engineering. v. 27, no. 3. March, 1934. p. 136-139. Practical examples of use.

Present state of psychrometric data. By Frederick G. Keyes and Leighton B. Smith. Refrigerating Engineering. v. 27, no. 3. March, 1934. p. 127-130.

Refrigeration. (Cont'd)

Refrigeration directory and market data book. Detroit, Business News Publishing Co., 1934. 692p. Complete list of manufacturers of refrigeration systems, equipment, parts, materials, supplies, production and service tools, related products, companion merchandise, material handling and delivery equipment, and other devices and services used by the industry. Also detailed specifications of all models of all makes of household and commercial refrigeration equipment, air-conditioning systems, and beer coolers; and all available statistical data on past sales of refrigeration equipment and potential future market.

Refrigeration energy use 20% of 1933 total. Electrical World. v. 103, no. 15. April 14, 1934. p. 562. Table gives energy used by appliances.

Retaining Walls.

Large retaining wall tests. V. Pressure of glacial till. By Karl Terzaghi. Engineering News-Record. v. 112, no. 16. April 19, 1934. p. 503-508. Results of final tests on actual soil from Fifteen-Mile Falls Dam indicate close conformity to the principles deduced in preparatory studies of sand and fine-grained soils.

Rope.

Wire ropes for building and highway contractors. By Henry M. Hall. Canadian Engineer. v. 66, no. 12. March 20, 1934. p. 3-5. General types of ropes most likely to give best service on various kinds of equipment. Standard methods of wire rope construction described.

Screens and Screening.

Screening the house. By L. R. Neel. Southern Agriculturist. v. 64, no. 4. April, 1934. p. 4.

Soil Heating.

Electric soil sterilization. Agricultural Engineering. v. 15, no. 4. April, 1934. p. 139. Two electrical methods have been devised. One makes use of heating elements immersed in soil, and other makes use of principle that an electric current passed between metal plates in soil will cause soil to heat. Both types of heating arrangements have been used successfully in special soil-sterilizing boxes. New development has been worked out at University of Maryland for sterilizing soils in place in beds and benches of greenhouses. This method makes use of resistance heating principle of passing electric current through soil. Development is still in experimental stage, but sufficient progress has been made to indicate its practicability. Cost of electric sterilization. Electric process has been much more effective in sterilizing soil to bottom and corners of beds than older steam process. Labor requirements for electric sterilization are only small fraction of those involved in steaming process.

Raising the temperature of the soil in greenhouses. Rural Electrification and Electro-Farming. v. 9, no. 106. March, 1934. p. 296-297, 319. Results of important research work at Experimental and Research Station, Cheshunt. 50% increase in yield.

Soil Heating. (Cont'd)

Soil hygrometer for irrigated cane lands of Hawaii. By A. Floyd Heck. Journal of American Society of Agronomy. v. 26, no. 4. April, 1934. p. 274-278. Made by attaching mercury manometer about 50 cm long to clay filter candle having very fine pores. Candle and entire system between candle and mercury is filled with water which has been boiled to remove all dissolved gases. Care is taken that all air is excluded from system when instrument is assembled. It is also necessary that all joints be absolutely tight. Candle and manometer are conveniently joined with small copper tubing. Whole system may then be mounted on rigid metal frame little over 3 feet long, so that candle may be placed at depth of about 12 inches, allowing about 2 feet of frame which carries manometer to protrude above soil. Zero point is determined by immersing candle in water and marking mercury level on arm of manometer attached to porous candle. Arm of manometer is then calibrated in centimeters up from zero point.

Soils.

Determining bearing power in earth foundations. By H. J. Summers. Engineering News-Record. v. 112, no. 16. April 19, 1934. p. 499-501. Tests, theory and interpretation of bearing tests conducted for foundations of an elevated water tank.

Liming Wisconsin soils. By A. R. Whitson and C. J. Chapman. 1934. 23p. Wisconsin. College of Agriculture. Extension Service. Circular no. 266.

Some soil pressure tests. By H. de B. Parsons. Proceedings of American Society of Civil Engineers. v. 59, no. 9. November, 1933. p. 1377-1388. Measurements were made of horizontal pressures on stationary bulkhead, resulting from bank sand and bank gravel. Fills were 7 feet deep, and alternately dry, fully saturated with water, and drained. Results indicated that horizontal pressures for pervious soil are more dependent on angle and internal friction than on angle of repose. At beginning of irrigation, pressure becomes less until hydraulic pressure, due to rising water, began to increase more than relatively diminishing pressures from soil.

Surface clays and shales of Ohio. By Chester R. Austin. 1934. 53p. Ohio. Engineering Experiment Station. Bulletin no. 81. Preliminary report on physical tests and properties.

Stream Flow.

Approach to determinate stream flow. By Merrill M. Bernard. Proceedings of American Society of Civil Engineers. v. 60, no. 1. January, 1934. p. 3-18. Treats of other aspects of problem and offers procedure that is believed to be approach to determinate stream flow. Transition from rainfall to stream flow is accomplished through medium of "distribution graph", which is found to be a function of water-shed characteristics. Possibility of developing

Stream Flow. (Cont'd)

distribution graph without resorting to stream flow records is shown. "Pluviagraph", or maximum hydrograph, is discussed, and its value to design in field of hydraulic engineering is demonstrated. Study utilizes six water-sheds of from 500 to 6000 square miles and embraces practically entire State of Ohio. These water-sheds were selected from unregulated streams served by United States Geological Survey, and represent acceptable range in area and water-shed characteristics.

Flow around a river bend investigated. By F. L. Blue, Jr., J. K. Herbert and R. L. Lancefield. Civil Engineering. v. 4, no. 5. May, 1934. p. 258-260. Tests on Iowa river support theory of helicoidal flow.

Subsistence homesteads.

Recent developments in subsistence-homesteads movement. Monthly Labor Review. v. 38, no. 2. p. 245-253. February, 1934. Federal subsistence-homesteads policies. Progress made under program. Types of families chosen. Types of communities planned. Sources of employment for homesteaders. Cooperating agencies. Some results of homestead program.

Tennessee Valley Authority.

Future of industry in the Tennessee valley region. By David E. Lilienthal. 1934. 11p. Mimeographed. Tennessee Valley Authority, Knosville, Tennessee.

Terracing.

Examples of money-making terraces. Farm and Ranch. v. 53, no. 4. February 15, 1934. p. 4.

Terracing for water conservation. Farm and Ranch. v. 53, no. 4. February 15, 1934. p. 24. Returns from tract of 7.57 acres of land on Spur Experiment Station from cotton this year, on 14-inch rainfall, have amounted to $419.10, or average acre income of $55.21. This particular tract of land was bought in 1928 for $50. per acre, and gross income this year has more than returned cost price. This tract of land is part of tract used in water conservation experiments at Spur Station, and production does not represent normal production for that section, but does show what can be done where proper use is made of water, the limiting factor in production in that area.

Tires.

Farm implement tires are changing rural practices. Farm and Ranch. v. 53, no. 3. February 1, 1934. p. 15. It is belief of experts that it will not be long until shellers, separators, manure spreaders, sprayers, threshers, wagons and other farm machinery will be mounted on farm implement tires, and farmer will not only get his work done more quickly - allowing him greater leisure - but that it will allow him to work in greater comfort and save him considerable money.

Tractors.

Field requirements of garden tractors. By A. A. Stone. Farm Implement News. v. 55, no. 10. May 10, 1934. p. 22-24.

Tractors. (Cont'd)

"New Day" tractor wheel. Farm and Ranch. v. 53, no. 4. February 15, 1934. p. 18, 20. Wheel is formed of segments. It is doubled throughout including double braced lug supporting side arms, which is supposed to be applicable to any wheel and hub system. Lugs can be changed from one position to other in short order, and this feature is not only valuable in time saving, but is protection to farm roads and highways. Lug teeth stand out far from central rim, and wide space thus created between two rows of lug teeth permits of rim cleaner under extreme conditions.

S. A. E. holds tractor meeting. Implement & Tractor Trade Journal. v. 48, no. 9. May 5, 1934. p. 14-15. Possibilities of higher speed power units, Diesel engines and their place in agriculture, and the fuel situation were leading subjects for discussion by engineers.

S. A. E. revives tractor activities. Farm Implement News. v. 55, no. 9. April 26, 1934. p. 20-21, 30. First tractor meeting of S. A. E. since about 1923.

Ventilation.

Estimated data on the energy, gaseous, and water metabolism of poultry for use in planning the ventilation of poultry houses. By H. H. Mitchell and M. A. R. Kelley. 1934. 735-748p. Reprinted from Journal of Agricultural Research. v. 47, no. 10. November 15, 1933.

Walls.

Modern walls and ceilings. Building Material Digest. v. 3, no. 4. April, 1934. p. 5-6.

Step by step plan for remodeling shows new type units. Domestic Engineering. v. 143, no. 4. April, 1934. p. 40-41, 157. Finished wall panels.

Water, Underground.

Ground water fluctuations to be studied in prairie states. Engineering News-Record. v. 112, no.16. April 19, 1934. p. 518. Undertaken by Professor Howard E. Simpson, University of North Dakota, and state geologist, under general supervision of Mississippi Valley Committee. This study is part of general investigation of rainfall and runoff for which $25,000 was recently allotted by Public Works Administration.

River water used at Dresden to increase ground supply. By C. Martin Riedel. Engineering News-Record. v. 112, no. 18. May 3, 1934. p. 569-570. Water from Elbe River is settled and filtered, and then allowed to seep into ground. Biological process of manganese used.

Water Heating.

Cost estimates sell water heaters. By O. L. Bock. Fuel Oil. v. 12, no. 11. May, 1934. p. 8, 48-49. How to calculate savings over gas and coal.

Weeds.

Outlaw weeds, and how to handle them. By J. W. Zahnley and F. E.

Weeds. (Cont'd)

Charles. Successful Farming. v. 32, no. 5. May, 1934. p. 16-17, 63-65.

Weirs.

Discharge formula and tables for sharp-crested suppressed weirs. By C.G. Cline. Proceedings of American Society of Civil Engineers. v. 60, no. 1. January, 1934. p. 19-36. Discharge formula presented in this paper applied to sharp-crested weirs that occupy full width of channel. Formula is entirely empirical and was developed by mathematical study of results of series of weir experiments made at Cornell University. It differs from those in use at present in that variable exponent, increasing with head, replaces customary fixed exponent (1.5), thus making it possible to obtain accurate discharges, even at low heads, by comparatively simple form of coefficient. Furthermore, correction for velocity of approach, which has been developed, depends entirely on physical dimensions of weir and can be applied directly.

New theory of a broad-crested weir. By Nicholas M. Oboukhoff. Part 1. 1933. 13p. Oklahoma. Engineering Experiment Station. Publication no. 19.

Windmills.

100 Kw. from Russian winds. By W. R. Sectorov. Electrical World. v. 103, no. 15. April 14, 1934. p. 540-541. Unconventional and larger than any others to have been extensively used, this 100-kw. Soviet experimental plant is said to have satisfactorily withstood, and operated under, a year of climatic changes.

Windows.

Comparative details: Bay windows. Pencil Points. v. 15, no. 3. March, 1934. p. 123-130.

Wood.

Properties of white fir and their relation to the manufacture and uses of the wood. By R. P. A. Johnson and M. R. Brundage. 1934. 77p. U.S. Department of Agriculture. Technical Bulletin no. 408.